

Implementing SOAP

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2-354

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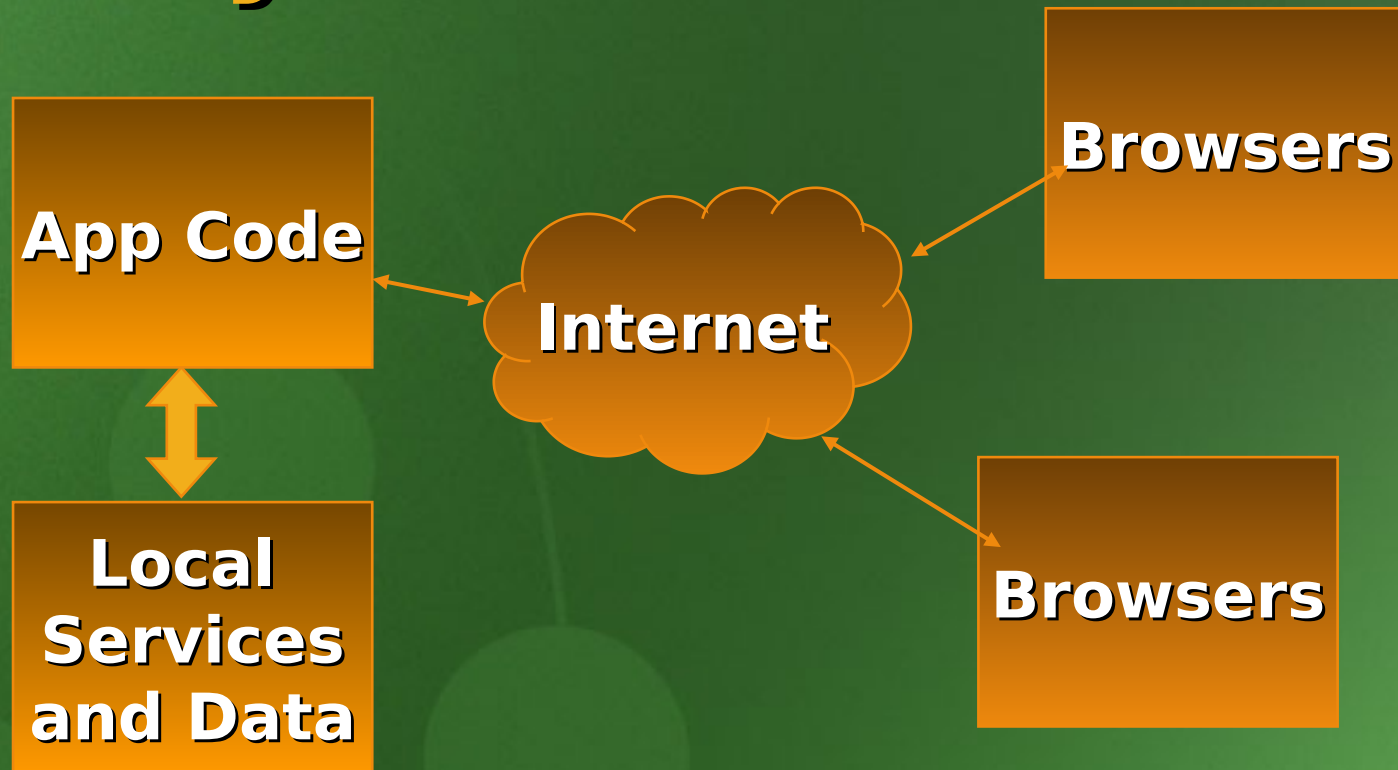
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point

Agenda

- **Why Web Services?**
- **SOAP**
- **SOAP Toolkit**
- **Future of Web Services**

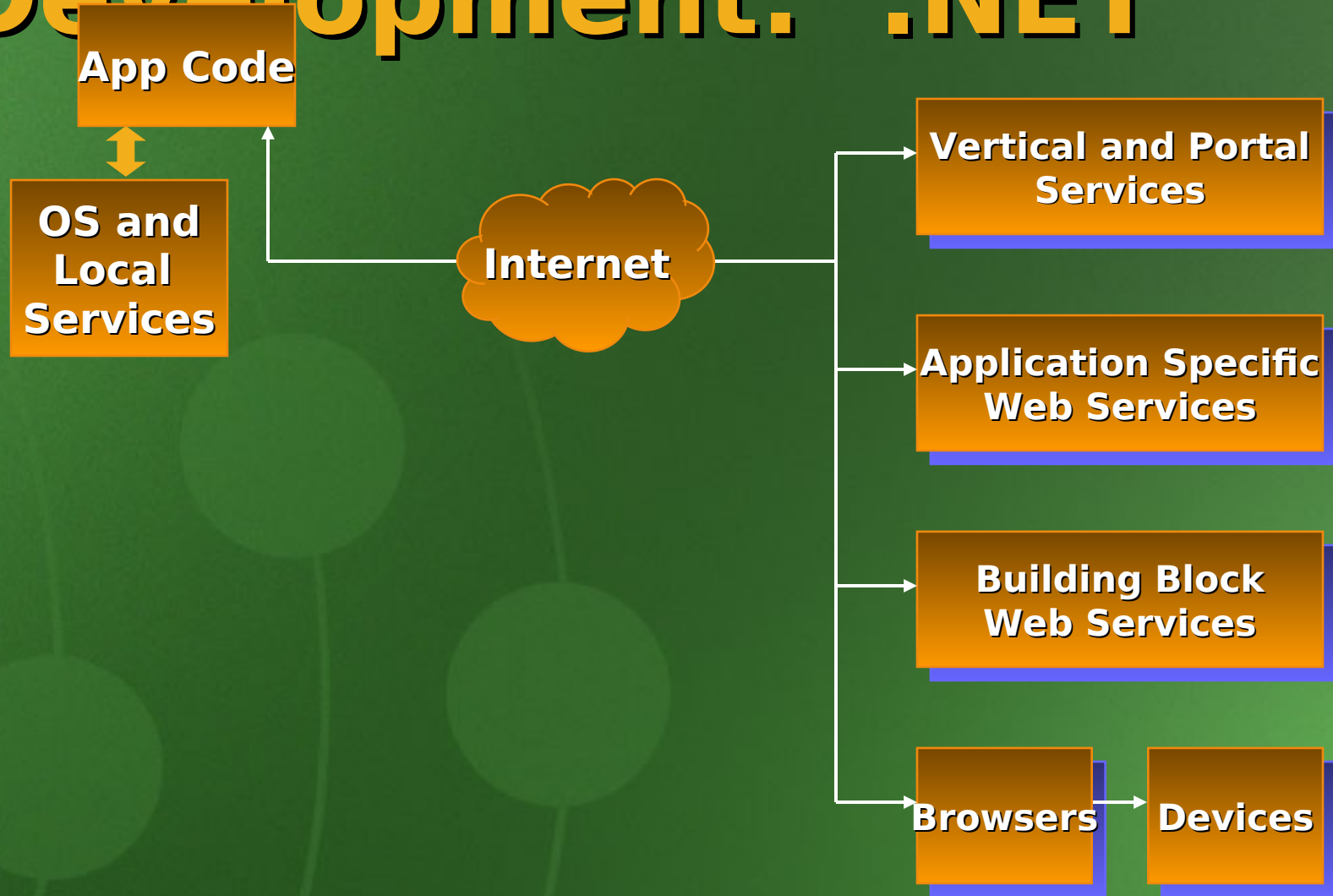
App Development Today



The Problem

- **Server and client need to understand:**
 - **Implementation details**
 - **Service deployment**
 - **Security types and trusts**
 - **Etc.**
- **Must “speak” the same platform (COM to COM, EJB to EJB, ORB to ORB, HTML 3.2, etc.)**

App Development: .NET



Web Services

- **Programmatic access to services of Web site**
- **Allow for rich, dynamic communication between applications**

“Components for the Web”

Web Services

- A common standard that can be used to describe data that is platform and language neutral - XML
- A common wire format protocol that is platform and language neutral - SOAP
- A common contract language for describing web services - e.g., SDL

What Is SOAP?

- **Simple Object Access Protocol**
- **Lightweight XML-based messaging format**

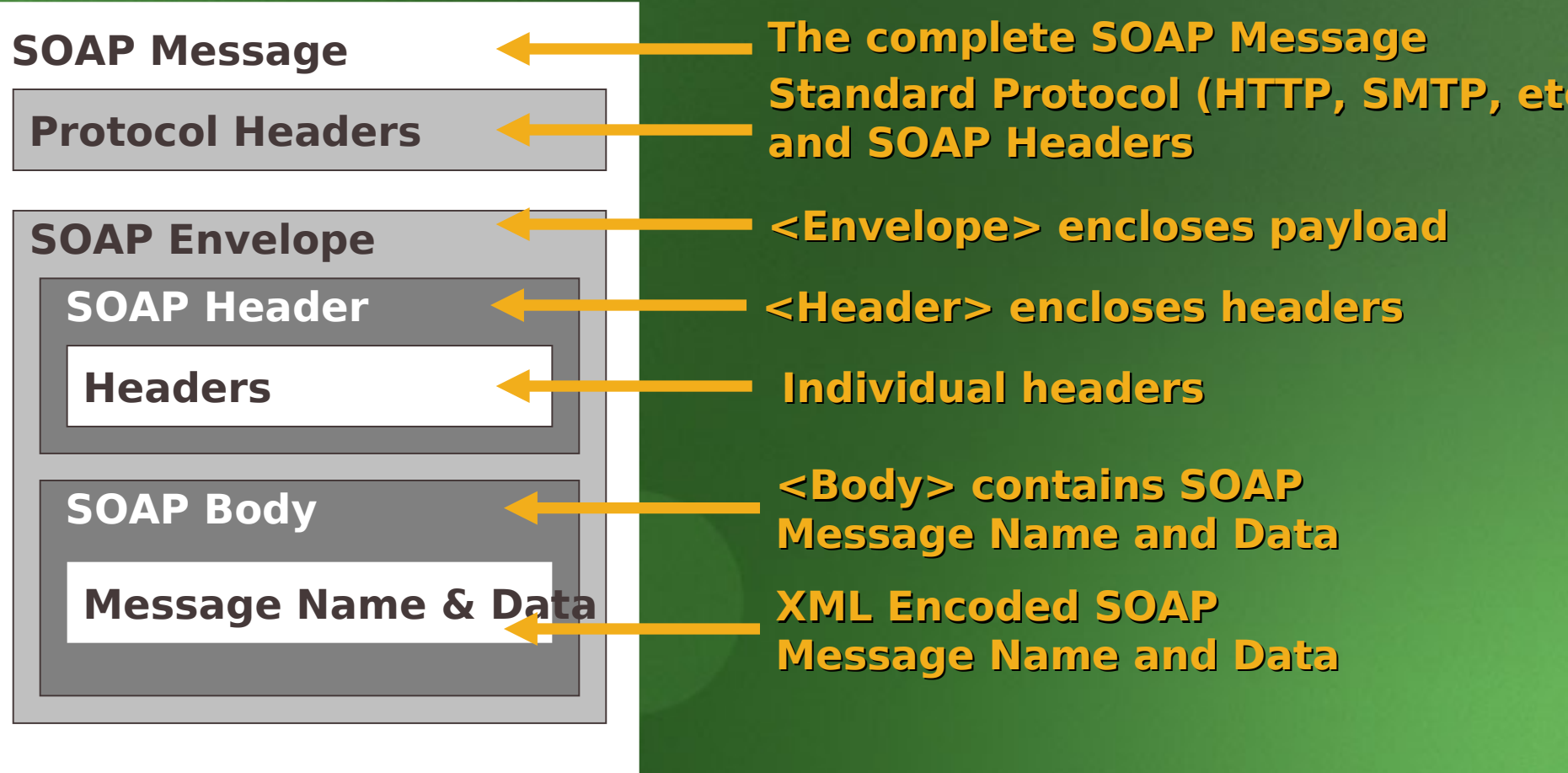
Works with:

- **Any operating system**
- **Any programming language**
- **Any platform**

Standards And SOAP

- Builds on
 - W3C XML standards
 - IETF HTTP standard
- SOAP Spec v1.1 to W3C
 - <http://msdn.microsoft.com/workshop/xml/general/soapspec.asp>

What Is A SOAP Message?



Simple SOAP Request (Using HTTP)

```
POST /StockQuote HTTP/1.1
Host: www.stockquoteserver.com
Content-Type: text/xml; charset="utf-8"
Content-Length: 323
SOAPAction: Some-Namespace-URI#GetLastTradePrice

<SQ:Envelope
  xmlns:SQ="http://schemas.xmlsoap.org/soap/envelope/"
  SQ:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
>

  <SQ:Body>
    <m:GetLastTradePrice xmlns:m="Some-Namespace-URI">
      <symbol>DIS</symbol>
    </m:GetLastTradePrice>
  </SQ:Body>
</SQ:Envelope>
```

Simple SOAP Response (Using HTTP)

HTTP/1.1 200 OK

Content-Type: text/xml; charset="utf-8"

Content-Length: nnnn

<SP:Envelope

xmlns:SP="http://schemas.xmlsoap.org/soap/envelope/"

SP:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"

>

<SP:Body>

<m:GetLastTradePriceResponse

xmlns:m="Some-Namespace-URI">

<Price>34.5</Price>

</m:GetLastTradePriceResponse>

</SP:Body>

</SP:Envelope>

SOAP In .NET Platform

- **Tools**

- **ASP+, Visual Basic .NET, Visual C++ .NET (ATL Server), C#, Visual FoxPro**

- **Protocols**

- **MSMQ, HTTP, TCP/IP, SMTP**

SOAP is everywhere in .NET

Bridging The Gap



**SOAP Toolkit
for
Visual Studio 6.0**



SOAP Toolkit Benefits

- **No need to master XML, SOAP**
- **No need to learn wire protocol**
- **Reduces firewall issues**
- **Ease of implementation**
- **Ease of deployment**
- **Use existing skills**
- **Use existing tools**

SOAP Toolkit Contents

- Server side reference listeners
- Remote object proxy engine (ROPE)
- SDL and source code generator (wizard)
- Documentation
- Code Samples
- Architectural Sample
 - Read that as... **Full source code**

What Is An SDL?

- **A Service Description Language**

(SDL) is:

- **An XML-based grammar for describing the capabilities of Web Services**
- **Extensible**
- **Similar in concept to IDL, but it's not IDL**
 - **IDL is platform dependent**
 - **SDL is platform independent**

The Toolkit, SDL, And SCL

“We published the SCL specification so we could solicit broad feedback from the industry. We’ll update the public toolkit to use SCL once the specification takes into consideration the feedback we’re going to get and is in a reasonably stable state. Until then it (the toolkit) will continue to use a form of SDL.”

What Is ROPE?

- **Remote Object Proxy Engine**
 - ATL COM
 - Usable from any COM-compliant language
 - Objects
 - Proxy
 - SOAPPackager
 - WireTransfer
 - Misc. objects
- **Two models**
 - Simple - “VB”-like simplicity
 - Advanced - “VC”-like control

ROPE - Simple Model

- **Proxy**
 - **Object.Method(Param1, ... ParamN)**
 - **Use existing skills**
 - **Minor changes to source base**
 - **High level of abstraction**
 - **Facilitates an RPC world**

ROPE - Advanced Model

- **SOAPPackager**
 - Greater degree of control
 - More flexible
 - Facilitates a messaging world
- **WireTransfer**
 - Control over headers

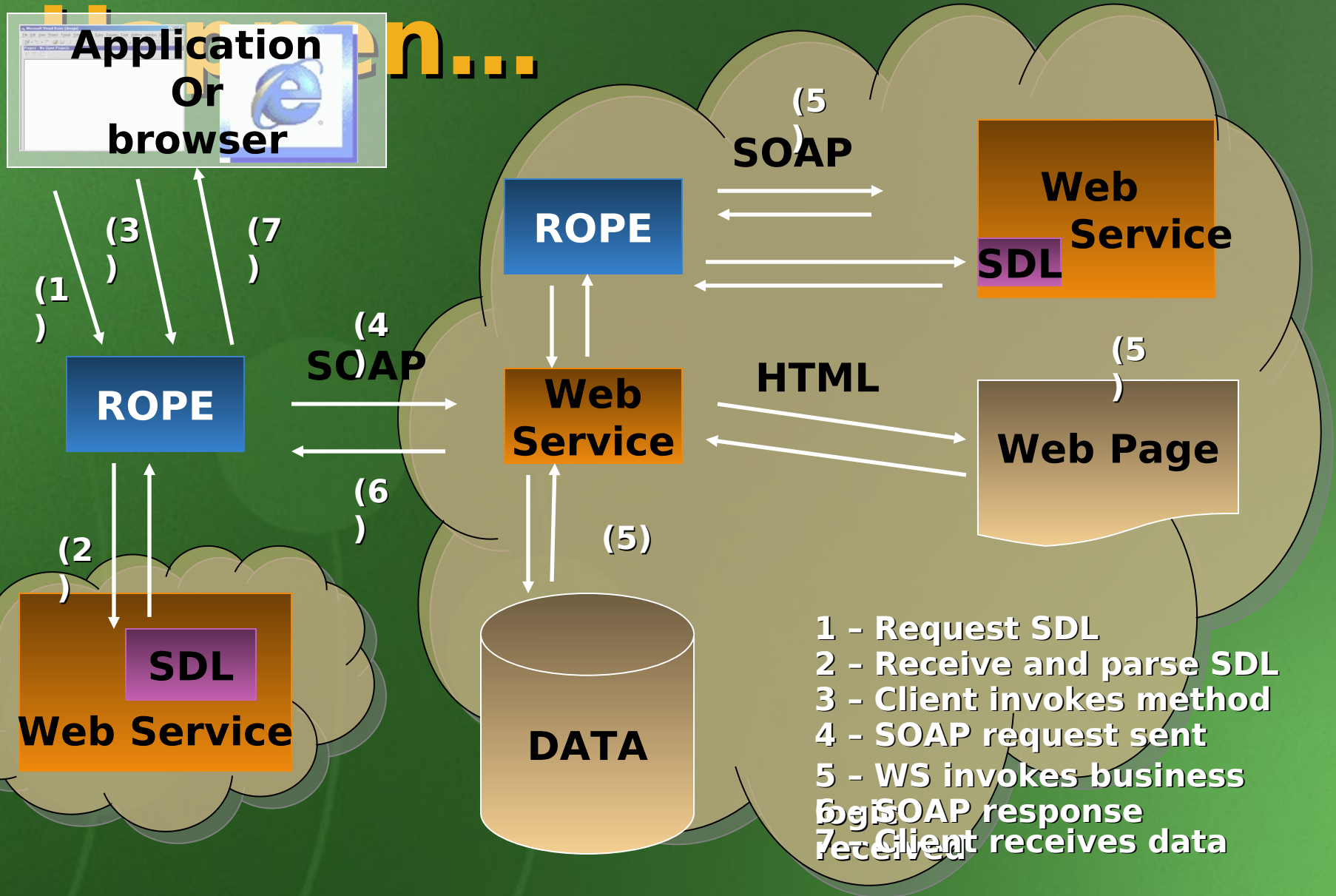
SOAP Listeners (Dispensers)

- **ISAPI listener**
 - ISAPI extension
 - Higher performance
- **ASP listener**
 - More control over processing
 - Can perform service directly

SOAP Industry Support

- **Microsoft**
- **IBM/Lotus**
- **DevelopMentor**
- **Userland Software**
- **IONA**
- **Rogue Wave**
- **ObjectSpace**
- **JetForm**
- **Digital Creations**
- **Rockwell Software**
- **Scriptics**
- **Intel**
- **Sun**
- **And many others...**

What Is About To Happen...



Demos

- **New service***
 - WIN32 COM object
 - Construct
 - Install
 - Consume
- **Existing service****
 - Visual Basic application
 - Consume

*** Using localhost**

**** Using live Internet site**

IONA: CORBA Interop

- **IONA's Orbix = 60-70% market share**
- **Building iPortal Suite for B2B portals**
- **Demo:**
- **Same Visual Basic client, same SOAP message**
- **New SOAP bridge to CORBA**
- **Server objects run in Orbix 2000 for Java**
- **Further information/demo download:**
- **www.ionac.com/soap**
- **E-mail info@ionac.com**

Update On The Toolkit

- **Build 204 is currently available**
- **Build 205 is in test**
 - **> 100 bug fixes**
 - **Thanks to you, in particular James Snell**
 - **Base64 support**
 - **XML schema/structure support**
 - **Better SOAP compliance**
- **Web release schedule**

Future Of Web Services

Building Block Web Services

Authentication, Tax calculation, Credit card authentication (e.g., Passport)

Vertical and Portal Services

Inventory, Banking, Instant Messaging (e.g., bCentral, Office.Net)

Application Specific Web Services

Written in ASP+, Visual Basic .NET, Visual FoxPro .NET, Visual C++ .NET, C#, etc.

Other Web Services

Web Services running on other operating systems or platforms

Call To Action

- **Identify the Web services used by your application**
- **Identify the Web services your application could provide**
- **Review SOAP specification**
- **Download the SOAP Toolkit for Visual Studio**
- **Start building Web Services today!**

Related Sessions

- **5-431 Building Web Services with ATL Server**
- **5-314 Data and XML in Visual Studio .NET**
- **4-321 Building and Using .NET Services with Active Server Pages+**
- **5-223 What's New in Visual Basic .NET**
- **5-312 What's New in Visual C++ .NET**

Resources

- **Toolkit Download**
<http://msdn.microsoft.com/xml/>
- **Newsgroup**
 - microsoft.public.msdn.soaptool
kit
- **Wish list**
 - soapwish@microsoft.com
- **World Wide Web Consortium**
 - <http://www.w3.org/xml/>
 - <http://www.w3.org/tr/soap>

Questions?



Where do **you** want to go today?

Microsoft